

# Management Plan for the BTeV Project Office

edited by J. Butler, S. Stone, M. Lindgren  
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## 1. Introduction

This document describes the mission, scope, participation and management roles of the BTeV Project Office. It also represents some of the key procedures and practices that will be followed throughout the course of the project. It will be updated as the project develops to include additional specific assignment of responsibilities, and specific mechanisms for managing the project, schedules, cost, quality assurance and safety. This document is subordinate to the BTeV Project Management Plan (PMP).

## 2. Mission of the BTeV Project Office

The BTeV Project Office performs management and oversight of the whole BTeV project. The head of the Project Office is the BTeV Project Director. The BTeV Project Manager reports to the Project Director and is ultimately responsible for delivering the project scope on schedule and within budget. He/she has the day-to-day responsibility for managing the Project Office. **The staff of the Project Office provides management, technical and administrative support to assist the BTeV Project Director and Project Manager in accomplishing their task.**

The relationships between the BTeV Project Director, the Project Manager, Fermilab, and the funding agencies, as well as his/her relation to the BTeV experimental collaboration are described in the BTeV Project Management Plan (PMP)[1]. This document describes the roles and responsibilities of the various members of the Project Office in carrying out their key function of providing support to the Project Director and Project Manager in accomplishing their mission.

## 3. Scope of BTeV Project Office Activities

An overview of the BTeV Project Office is contained in [1]. The Preliminary Work Breakdown Structure (WBS) is given in [2]. The staff positions of the BTeV Project Office are shown in Figure 1.

## 4. Participation in the BTeV Project Office

The BTeV Project Director and Project Manager are appointed in a manner set forth in the PMP. All appointments within the Project Office will be made by the Project Director with the advice of the Project Manager. In some cases, the concurrence of the BTeV spokesperson may also be required. Appointments may be indefinite, contingent on satisfactory performance, or term, typically for two-year terms (renewable).

## 5. Key Roles in the Project Management Task

The organization of the BTeV Project Management Task is defined in the Work Breakdown Structure [2]. The key management roles are described here. By "role" we mean a part in the task that may be carried out by one or more persons. It is understood that in BTeV, people may have

more than one role (and will therefore have only a fraction of their effort committed to a particular role in the Project Management Task). For example, an engineer may work on more than one task. It is also understood that, in some cases, more than one person may play any given role.

**Figure 1: BTeV Project Office Staff**



### **5.1. BTeV Project Director and Deputy Director**

The responsibilities and the method and duration of appointment of the BTeV Project Director and Deputy Director are described in the PMP. The BTeV Project Office supports the activities of the Project Director to accomplish his/her mission.

### **5.2. BTeV Project Manager**

The responsibilities and the method and duration of appointment of the BTeV Project Manager are described in the PMP. The BTeV Project Office supports the activities of the Project Manager to accomplish his/her mission. The BTeV Project Manager reports to the BTeV Project Director. The BTeV Project Manager exercises day-to-day management of the Project and of the technical and administrative staff, who report to him/her.

### **5.3 BTeV Project Engineer**

The Project Engineer is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager, and with the concurrence of the BTeV spokesperson and others specified in the PMP, on a renewable term basis. The Project Engineer is responsible for overseeing the detector subsystems with an emphasis on integration, resource planning and scheduling, quality assurance, configuration management, and safety issues. The Project Engineer works closely with the Project Managers and Scientists to coordinate, manage, and track workflow, update the Integrated Resource Loaded Schedule, and present information during technical and project reviews. Duties of the position include assisting with engineering design and analysis where required, developing and reviewing specifications and standards, providing technical review of calculations, safety documents and procedures, and major procurements, and becoming a member of the change control and technical review board.

The Project Engineer will assist in the supervisory, scheduling, budgeting and oversight roles in all areas of engineering work for the BTeV Project

### **5.4 BTeV Project Mechanical Engineer**

The BTeV Project Mechanical Engineer is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager, and with the concurrence of the BTeV spokesperson and others specified in the PMP, on a renewable term basis. He/she reports to the BTeV Project Manager. He/she advises the Project Director and Project Manager on all issues connected to the mechanical design and realization of the BTeV detector. He/she also advises and works with all participants in BTeV mechanical tasks to ensure that each system achieves its requirements within budget, on schedule, and safely. This includes responsibility for setting standards, organizing reviews of key designs, fabrication, source selection, and procurements, establishing procedures for testing, integration, checkout and acceptance of all mechanical components, etc.

The BTeV Project Mechanical Engineer is responsible for defining BTeV mechanical standards, including those involving drawings and quality assurance, ensuring all mechanical work in BTeV adheres to BTeV mechanical standards, for ensuring complete documentation of the systems to facilitate assembly, integration, and maintenance, and for ensuring adherence to all ES&H standards required by Fermilab.

The BTeV Project Mechanical Engineer will assist in the supervisory, scheduling, budgeting and oversight roles in the area of mechanical work for the BTeV Project

### **5.5 BTeV Project Electronics Engineer**

The BTeV Project Electronics Engineer is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager, and with the concurrence of the BTeV spokesperson and others specified in the PMP, on a renewable term basis. He/she reports to the BTeV Project Manager. He/she advises the Project Director and Project Manager on all issues connected to the electronic/electrical design and realization of the BTeV detector. He/she also advises and works with all participants in BTeV electronics/electrical work to ensure that each system achieves its requirements within budget, on schedule, and safely. This includes responsibility for setting standards, organizing reviews of key designs, fabrication or procurements, establishing procedures for testing, integration, checkout and acceptance of all electronics and electrical components and subsystems, etc.

The BTeV Project Electronics Engineer is responsible for defining BTeV electronics standards, including those involving quality assurance, ensuring all electronics/electrical work in BTeV adheres to BTeV electronics standards, for ensuring complete documentation of the systems to

facilitate assembly, integration, and maintenance, and for ensuring adherence to all ES&H standards required by Fermilab.

The BTeV Project Electronics Engineer will assist in the supervisory, scheduling, budgeting and oversight roles in the area of electronics/electrical work for the BTeV Project

## **5.6 BTeV Project Software Engineer**

The BTeV Project Software Engineer is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager, and with the concurrence of the BTeV spokesperson and others specified in the PMP, on a renewable term basis. He/she reports to the BTeV Project Manager. He/she advises the Project Director and Project Manager on all issues connected to the software and computing issues in the design and realization of the BTeV detector. He/she also advises and works with all participants in BTeV involved in software and computing work to ensure that each system achieves its requirements within budget, on schedule, and safely. This includes responsibility for setting standards, organizing reviews of key designs and codes, and their realization, establishing procedures for testing, integration, checkout and acceptance of all software and their interfaces to electronics subsystems (trigger, data acquisition, slow control).

The BTeV Project Software Engineer is responsible for defining BTeV software standards, including those involving quality assurance, ensuring all software work for the BTeV detector construction adheres to BTeV software standards, for ensuring complete documentation of the systems to facilitate development, debugging, integration, and maintenance, and for ensuring adherence to all ES&H standards required by Fermilab.

The BTeV Project Software Engineer will assist in the supervisory, scheduling, budgeting and oversight roles in the area of software and programming work for the BTeV Project

## **5.7 BTeV Integration Physicist**

The BTeV Integration Physicist is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager, and with the concurrence of the BTeV spokesperson and others specified in the PMP, on a renewable term basis. He/she reports to the BTeV Project Manager. He/she advises the Project Director and Project Manager on all issues connected to integration issues in the design and realization of the BTeV detector. He/she also advises and works with all participants in BTeV on integration issues to ensure that each system achieves its requirements within budget, on schedule, and adheres to all applicable ES&H standards. This includes responsibility for making sure that integration issues are properly taken into account in all standards and reviewing key designs, and their implementation to ensure that integration issues are considered. He/she is responsible for helping to develop the integration and commissioning plans for the detector.

The BTeV Integration Physicist will assist in the supervisory, scheduling, budgeting and oversight roles in the area of integration for the BTeV Project

## **5.8 BTeV Scheduler**

The BTeV Scheduler is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager. He/she reports to the BTeV Project Manager and works with the Project Management and the subproject managers to develop the BTeV schedule and to track it and to make changes when necessary. He/she is responsible for providing regular and extraordinary

reports concerning the progress of the Project and identifying potential problems and reporting them to the Project Management.

## **5.9 BTeV Budget Officer**

The BTeV Budget Officer is appointed by the BTeV Project Director, with the advice of the BTeV Project Manager. He/she reports to the BTeV Project Manager and works with the Project Management and the subproject managers to develop the BTeV budget and to track it and to make changes when necessary. He/she regularly provides support to Project Management and especially to Level 2 managers to resolve problems related to the budget. He/she is responsible for providing regular and extraordinary reports concerning the cost of the Project and identifying potential problems and reporting them to the Project Management.

## **5.10 BTeV Administrative Support**

BTeV Administrative Support personnel are appointed by the BTeV Project Director, with the advice of the BTeV Project Manager. They report to the BTeV Project Manager and provide assistance to the BTeV Project Director, Project Manager and Project Office staff in carrying out their mission. This will include assistance with report preparation, documentation, travel arrangements, support for visitors, support for reviews, etc.

## **5.11 Safety Officer**

The role of the BTeV Safety Officer is described in the Project Management Plan. The relationship of the BTeV Safety Officer to other Safety Support Officers and organizations within Fermilab is described in the PMP.

## **6.0 BTeV Technical Board**

The BTeV Technical Board advises the BTeV Project Director and Project Manager on all issues related to the BTeV project. Its purpose and composition are described in the BTeV Project Management Plan.

## **7.1 Internal Reviews**

Internal reviews are a mechanism to bring expertise within BTeV to a specific activity or problem guarantee a successful result or resolution. Reviews are a mechanism to assist in the elimination of problems and to make sure that interfaces to other activities and tasks are acceptable to the people carrying out those activities. They are intended to be constructive aspects of BTeV project management. Because they take significant time to organize and carry out, they should be undertaken with specific goals in mind and to address specific problems or issues. In some cases, these reviews may invite external consultants but in all cases they submit their results to the BTeV Project Director, Project Manager and the BTeV spokesperson.

Internal reviews may include, but are not limited to:

- Subtask reviews

- Electronics reviews, which may include reviews internal to individual work or subtasks as well as reviews specified by the BTeV Project Management. Examples of the latter kind of reviews might include
  - ◊ Interfacing or integration reviews including grounding and shielding reviews.
  - ◊ Approval reviews for major chip submissions, and chip or board procurements
  - ◊ Review of sensor design and procurement
- Software reviews, which may include reviews internal to individual work or subtasks as well as reviews specified by the BTeV Project Management. Examples of the latter kind of reviews might include
  - ◊ Software code walkthroughs
  - ◊ Reviews of major commercial software procurements or choices of free/shareware software
  - ◊ Mock data challenges (planning and assessment)
- Mechanical reviews
  - ◊ Mechanical design and structure reviews
  - ◊ Cooling system reviews
- Integration reviews, which are reviews, intended to ensure that tasks, which must interoperate, do so correctly.
- BTeV Project Reviews, that is participation in project-wide reviews organized by the BTeV Project Director and/or the BTeV spokesperson.

## **7.2 BTeV External Reviews**

The BTeV Project Office and Management will be reviewed at least annually. Reviews will have a specific, detailed charge and will have a small panel of outside experts who will comment formally on the review and note any problems or areas of concern. The results of the review will be summarized in writing and will be presented to the BTeV Director and Technical Board. Serious questions about direction or technical approach will be discussed and resolved by the BTeV Project Manager with the assistance of, and to the satisfaction of, the BTeV Technical Board, Project Director, and Spokesperson.

## **7.3 External Agency or Fermilab Reviews**

In addition to the external reviews organized by BTeV, there will be reviews organized by and reporting to external funding agencies and Fermilab. The BTeV Project Director, with the help of the BTeV Project Manager, or the BTeV spokesperson, as appropriate to the particular review, will organize BTeV presentations at these reviews. It will be the role of the BTeV Project Manager to provide the required support for the preparation for the review, to participate as required in the review, and help resolve any issues emerging from the review.

## **7.4 Reporting**

The BTeV Project Manager will provide BTeV Spokesperson with contributions for reports that they require or that are required of them by Fermilab or funding agencies. The BTeV Project Manager will develop, in conjunction his or her team, a reporting procedure for the whole project as well as for the Project Office subproject. Such reporting should guarantee good information flow within the project but should require no more effort than is needed to meet this objective.

## **7.5 Assignment of Responsibility for Work**

At some point a subgroup or collaborating institution may want (or be required) to formalize its activity and assume responsibility for work on a BTeV subsystem. The work may be an individual subtask or subtask component. Assumption of responsibility for an activity will be done by submitting a formal written proposal to the relevant Level 2 Manager. The Level 2 Manager will work with the proponents to develop the final proposal and after the Level 2 Manager approves it, he or she will submit it to the BTeV Project Manager, the BTeV Technical Board, the BTeV Project Director and the BTeV Spokesperson, as required in the PMP.

After a positive decision, the Level 2 Manager will negotiate an 'assignment of responsibility' for the project or subtask. This agreement with the group will be written and will specify all requirements (performance, interfacing, etc), all deliverables, schedule, costs, and manpower requirements. Deliverables will normally include technical components (with interconnections, power, etc), quality assurance data (results of acceptance tests), test and debugging procedures, supporting computer programs (simulations, readout, diagnostic, monitoring), complete documentation (schematics, trouble-shooting), safety information and procedures, and a maintenance and repair plan. The agreement will also specify commitments to install, debug, integrate, and maintain all devices. The proposed agreement will be presented to the Technical Board for discussion. The BTeV Project Manager and BTeV Project Director will approve the agreement, with the concurrence of BTeV Technical Board.

The agreement must be reflected in the group's formal MOU and funding and manpower plan. Each year's work will be captured in a annual Statement of Work (SOW). The group will then undertake the subtask. Reports and cost and schedule data will be provided for the regular reports, as specified in the BTeV Project Management System Description[3] and upon special request. Evaluations and/or reviews will be conducted as needed but no less than once per year.

The Level 2 Manager must ensure that all work assigned under the Task is being carried out on schedule, within budget, is technically sound and meets the requirements of the project for quality and ES&H. If work is not being done or is not meeting the requirements, action must be taken to correct the situation. If the corrective action requires changes in MOUs or SOWs, the problem must be brought to the BTeV Project Manager for resolution. If that fails, then the problem will be brought to the BTeV Project Director for resolution.

## **8 References**

- [1] BTeV DRAFT Project Management Plan, BTeV document number 2850.
- [2] WBS 4.0 OpenPlan Level 2 Subproject WBS File, BTeV document number 1701.
- [3] Project Management System Description, document number 3301.